'. . . and flowers for our amusement': the early collecting and cultivation of Australian plants in Europe and the problems encountered by today's taxonomists

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Abstract

Australian plants have been grown in Europe since 1772 when seedlings were raised at the Royal Gardens, Kew. The foundation of the colony of New South Wales provoked a fashion among gardeners for the cultivation of Australian species, and seeds and living plants were regularly sent from the colony. Private gardeners could soon purchase a substantial selection of Australian plants from nurseries. French collectors also played a small part in the introduction of plants from Australia.

These fashionable flowers were difficult to grow, but considerable success was achieved in British gardens and the illustrated periodicals of the period 1787–1840 regularly featured examples. However, as hardier, colourful exotics were introduced to England from other regions, and as refined systems were devised for transporting living plants, the fashion for the demanding Australian plants waned rapidly, and after 1840 they became largely the amusement of botanical gardens.

Australian endemics were occasionally described and named from cultivated plants between 1788 and 1815. The difficulties of locating type specimens and bibliographic problems are noted in this review.

> 'Some see no beauty in our trees without shade, our flowers without perfume, our birds who cannot fly and our beasts that have not yet learned to walk on all fours; But the dweller in the wilderness becomes familiar with the beauty of loneliness . . .'[1]

Those lines by Marcus Clarke, written in 1876, mark the beginning of an indigenous appreciation of the Australian bush (Searle 1973). But a century earlier the beauty of the shade-denying trees and the scentless flowers had so impressed a '. . . swarm of modern tourists, yclept, or Botanists or Florists'[2] that Stingray Bay became Botany Bay (cf. Stearn 1968, 1969, 1974) and the romance between Britain and New Holland began. Within two decades, Botany Bay was to be transmogrified from a paradise of flowers into a hell (White 1790), becoming nothing short of terrifying particularly for the lower classes in Britain and Ireland. But James Cook's signal tribute to botany was not entirely tarnished by the miscreant cargoes that were '. . . bound for Botany Bay'[3]; in certain circles its name still evoked beauty; its name still retained the excitement of flora-drunken tourists. So a century before Marcus Clarke's bush-dweller learned to appreciate the '. . . hieroglyphs of haggard gum-trees'[1], there were people, gardeners especially, who admired and even lusted after the non-descript productions of this antipodal prison.

The lure of the plants of New Holland was such that before the First Fleet sailed, one enterprising nursery proprietor, James Lee, printed a set of instructions to ensure that any seeds, dispatched on the returning vessels of the First Fleet, had a fair chance of reaching London alive (Willson 1961). At first a mere trickle of species was transplanted to Europe (e.g. Nelson 1983) but by the 1820s that trickle was a steady, profitable stream. Yet soon afterwards it was insufficient and lack-lustre and another nurseryman, Joseph Knight, is said to have paid the huge sum of £1,500 for seeds and plants collected by William Baxter (Coats 1969, Gorer 1978, Willson 1982).

European horticulturists' fascination for Australian plants reached a peak in the 1830s, only diminishing when other botanical paradises were explored, revealing exquisite new flowers and thus allowing eager gardeners to choose novelties that either were not so culturally pernickety (such as rhododendrons) or, contrariwise, were even more demanding of horticultural technology (tropical water-lilies and orchids) (for accounts of plant introductions see especially Coats 1969, Gorer 1978). In all, Australian plants held sway in fashionable European gardens for perhaps just forty years, from about 1795 to 1835.

Pre-1788 introductions

The first indubitable record of the seeds of Australian native plants reaching Europe is contained in the reports of the expedition of Willem de Vlamingh (Schilder 1985; Nelson 1984) which returned to Holland in 1698 — along with wood samples and a phial of oil distilled from this wood, 'a small chest containing shells collected on the beaches, fruits, plants, etc . . .' was received by the Gentlemen XVII of the Dutch East India Company (Schilder 1985). Nicolas Witsen was given the fruits of a cycad. The eventual fate of these 'first fruits' is not recorded, but it would be surprising if the inquisitive Witsen, who had a passion for botany and had introduced the coffee plant into Holland (Engels 1986, Nelson 1984), did not have some of them sown.

William Dampier's curiosity about the plants of the north-western coast is well known (George 1971, Marner 1988, Nelson 1984); he reported that some of them '. . . had fruit like peascods; in each of which there were just ten small Peas . . .'(Dampier 1703). But did he bring any seeds back to England? Lemmon (1979) claimed that Dampier introduced *Clianthus formosus*[4]* into England, but it is a claim that is not sustainable, and considering the fate of HMS *Roebuck* (cf Lloyd 1966, Spencer 1981) is somewhat improbable.

The first Australian plants reliably recorded in European gardens arose from seeds collected during from the first of James Cook's voyages (Nelson 1983). Banks and Solander spent eight days at Botany Bay collecting and gathered approximately 3,500 specimens representing about 250 new plant species (Stearn 1969) but they did not collect seeds in such vast abundance, and they had no gardener with them.

The imbalance between seeds and herbarium specimens is not at all unusual; indeed it is a characteristic of any botanical field-trip. If plants are in bloom, fruits and seeds generally will not be available. If seeds are ripe, the collecting of herbarium specimens (which almost inevitably will not have flowers) is not so meritorious. Seed-collecting and the making of herbarium collections of taxonomic value are almost mutually exclusive.[5] Banks and Solander collected herbarium specimens including examples of fruits, but had not the opportunity deliberately to gather seeds for garden purposes. Another fact about field-work is this: to gather a branch or a inflorescence for the herbarium may take a few seconds (perhaps a few minutes if the specimens are pressed and labelled on the spot), but *to find* and then collect *sufficient* seeds to ensure reasonable success in establishing a species in cultivation takes many more minutes. Thus time alone explains why most collectors who have gathered excellent herbarium material have not also well-served the horticultural fraternity and, conversely, those who facilitated gardeners by gathering fruits, rarely are deemed worthy by herbarium botanists because they did not also collect good, flower-laden specimens.

Between 1771 and 1788, seeds did reach British gardens from Australia and New Zealand, but only nine Australian plants are definitively recorded in cultivation during this time (Nelson 1983); they initiated the period in Europe's horticultural history which Kraus (1894) termed 'Zeit der NeuHollander' (Stafleu 1969). There must have been a few other Australasian plants in European gardens at this time, but unflowered and so nameless, their presence was not noteworthy; it is possible that evidence of such plants is extant in manuscripts and herbarium collections, but no-one has systematically searched for that information.

The First Fleet and its aftermath

The arrival of the First Fleet was as seminal an event in the history of Australian horticulture as it was for *Terra Australis Incognita.* The new residents of Port Jackson brought with them European, South American and Cape plants, thus initiating an invasion of aliens (Parsons 1981, Gilbert 1986, Wace 1986). Eventually the 'First Fleeters' found opportunities, which were not available to the tourist-naturalists, to gather seeds of the indigenous plants and to pack them, according to instructions, for shipping to Europe.

It is remarkable that Sir Joseph Banks did not transplant a gardener or botanist with the Fleet (Gilbert 1981, 1986), but instead put his faith, and hopes of acquiring plants, in the surgeons and officers. Seeds, herbarium specimens and botanical paintings were gathered by Governor Arthur Phillip, Surgeon-General John White and others. Each sent materials to different contacts — there was no single conduit for the much advertised '. . . non-descript productions'[6] of New South Wales which soon appeared in London. Dr White provided Thomas Wilson with fruits of *Banksia, Eucalyptus* and *Xylomelum* (these were drawn and then exhibited in London) (White 1790) and later he lent his collection of botanical paintings to James Edward Smith (1793). Dr Denis Considen sent the seeds and resin from the 'yellow gum' (*Xanthorrhoea*) to Sir Joseph Banks (Considen 1790, Nelson in prep.). Apparently others sent seeds to James Lee at the Hammersmith nursery for Governor Arthur Phillip's (1789) published journal included this note:

> Of the plants in general which have been brought from Botany Bay, and the adjacent country, no notice has been taken in this work . . . Many of them are now to be seen in the highest perfection at the nursery gardens of that eminent and learned botanist, Mr Lee . . .[7]

There are no easily computable figures for the quantity of natural history specimens leaving Port Jackson in those early days — certainly each ship returned to Europe with some curiosities. For seeds and particularly for live plants that journey was hazardous; even if the ships were not lost or wrecked, many factors combined to diminish the success-rate.

Packing and transport problems

Today we think little about collecting ripe seeds, drying them and putting them in paper bags; most will survive well if treated this way although their viability may diminish (Gorer 1978). However, in the late eighteenth century, the task of keeping seeds dry and away from the vermin aboard ship was not so easy; damp conditions, salt spray, and rats all took a heavy toll, which is why Lee and others suggested various elaborate methods for preserving seeds (Desmond 1979, 1987a).

Transporting living plants was even more difficult, and the principal causes of death were over-heating, rotting, poisoning with sea-salt and even drying out (Desmond 1987a). Plants were successfully carried on long sea voyages if elaborate preparations were made to protect them from heat, by shading them from the sun, and from sea-spray — Bligh achieved remarkable success with bread-fruit (see below), but the more general result was that only one in every thousand plants reached their destination alive (Livingstone 1822).

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* In general, botanical names quoted in this paper are those used by the original authors, or in the contemporary publications. Orthography has been corrected, but few attempts made to equate the names with modern taxonomic opinions. Thus authorities are omitted. The problems of equating the cultivated taxa with modern species are noted on pp. 290–292.

Not until the mid-1830s was there substantial improvement when the glass-panelled Wardian Case was 'invented' (Ward 1842); living plants could be sealed into these and salt-spray was excluded effectively. Glass-topped cases had been employed aboard HMS *Bounty* during the famous bread-fruit voyage by David Nelson, who was precisely instructed '. . . to preserve the trees and plants from the salt dew arising from the sea. . .or. . .to wash it off with freshwater', and earlier by Archibald Menzies (Anderson 1960, Galloway and Groves 1987) on HMS *Discovery*, and by French expeditions (cf. Brosse 1983, pp. 84–85), but their's were not sealed containers so salt-water could percolate into the plant chamber (Desmond 1987a).

In the last decade of the eighteenth century, a nursery-garden for indigenous plants was formed at Port Jackson (Gilbert 1986) to hold specimens that were destined for England, but how many living plants were successfully transported cannot now be ascertained. A note in Curtis's *The botanical magazine* about *Metrosideros citrina*[8] is the first printed account of a successful transplant of a whole plant. David Burton sent sixty tubs to Kew on HMS *Gorgon* in December 1791, and further fifty tubs were ready before his untimely death. *Campanula gracilis*[9], raised by Curtis from '. . . mould that came with the roots of other plants', may have come from one of these. On 7 June 1793, 182 boxes and tubs 'supposed to be a present . . . from Gov'R Philips'[10] were brought to the Royal Gardens, Kew. Not long afterwards, William Aiton recorded the receipt of 'a box containing seeds and roots collected by Mr Menzies . . . among which [are] curious Banksias &c. . . .'[11]; seeds from William Paterson, who was stationed on Norfolk Island, and from Governor Phillip also were received that same day. Thus by 1793, plants from eastern Australia, the south-west and also Norfolk Island, flourished in the Royal Gardens, Kew.

Phillip, White and Paterson were amateurs; in 1791 the hapless David Burton arrived at Port Jackson as collector for Banks (Gilbert 1986), and in the succeeding years other professional collectors and itinerant botanists came to New Holland — Archibald Menzies, George Caley, Robert Brown (Edwards 1976, 1981a, Mabberley 1985), Peter Good (Edwards 1981b), Richard and Allan Cunningham to name but a few — and all contributed to the increasing population of New Holland plants growing in European gardens.

Botanical periodicals in England

News of successful introductions — usually once the plants had bloomed — was passed to gardeners through the botanico-horticultural periodicals that became fashionable at this time (Desmond 1977, Edwards 1979, Henrey 1975); Australasian plants were also noted in works which had no illustrations, such as William Aiton's *Hortus kewensis* (1789, 1810) and Richard Salisbury's *Prodromus stirpium in horto ad Chapel Allerton vigentium* (1796, Britten 1916). The colourful illustrations in the periodicals undoubtedly fostered the image of the New Holland's 'immense botanical treasures'.[12]

William Curtis (Desmond 1987b, 1887c), who had a private botanical garden (in reality a nursery) at Brompton, initiated the procession of illuminating publications with *The botanical magazine* in 1787 — it was the first and is now the sole survivor. The first Australian species displayed by him was *Acacia verticillata*[13], the plate based on a plant then in cultivation in William Malcolm's nursery; L'Heritier (1787) had depicted it in *Sertum Anglicum*. The New Zealand tree, *Sophora tetraptera*, which had been planted out-of-doors in Chelsea Physic Garden about 1774 — it was one of the introductions from Cook's first voyage (Nelson 1983) — was figured in 1791.[14] The next Australian species was not illustrated until April 1794 (*Metrosideros citrina*) when it was stated that the plant had come as a 'root' from Botany Bay[15]; the illustration was based on a shrub in Lord Cremorne's collection, and Curtis noted that the species had also flowered at Kew and Syon. A clutch of legumes followed — *Glycine bimaculata*, *G. rubicunda* and *G. coccinea*[16] — illustrating one of the principal characteristics of the early introductions, a preponderance of species with woody fruits or hard-coated seeds (see also Cavanagh 1981, 1982, 1983a, b).

Most plants raised in these early decades of 'Zeit der NeuHollander' were shrubs and inevitably took many years to reach maturity and bloom. The young, unflowered plants were frequently propagated and as seed was not available this was achieved by taking cuttings; it is remarkable how successful nurserymen were in striking cuttings of such plants as *Banksia* (Cavanagh 1983a) and *Acacia*. *Correa* was one of the most amenable genera and *C. alba* soon became common in collections (cf. Mackay 1826).

The popularity of Australian plants was not especially fostered by William Curtis; up to the beginning of 1800 only eight Australian species had been displayed in *The botanical magazine*. The chief display-case for New Holland plants was *The botanist's repository* published and illustrated by Henry Andrews (Henrey 1975), with the assistance of his father-in-law John Kennedy. The first issue appeared on 1 November 1797, and the second plate portrayed *Springalia* [sic.] *incarnata* (from a specimen cultivated in Lee and Kennedy's nursery). *Correa alba* followed.[17] William Paterson's introductions were prominent in Andrews's periodical, many depicted from plants in the care of Lee and Kennedy — *Acacia stricta*, *Goodenia calendulacea* and *G. ovata* were explicitly said to have arisen from Paterson's seeds. The first volume of *The botanist's repository* contained nine Australian plants; volume 2 contained eight, volume 3 had eleven, and in volume 4 the twelve Australian illustrations included *Banksia praemorsa* from Menzies and *Hibiscus patersonius* from Norfolk Island.[18]

Other publications detailing Australasian species were not so voluminous nor so richly embellished from garden plants. James Edward Smith's (1793) *A specimen of the botany of New Holland* was not based on cultivated sources, but on drawings and specimens sent to London by Surgeon-General John White; however, there are references in the text accompanying the sixteen plates to cultivated plants. Smith (1797) also noted garden specimens of *Eucalyptus corymbosa* and *Leptospermum lanigerum*, for example, in his paper on the 'Natural order of Myrti' and often included the negative information that he had seen no living example of certain species. In 1804, Smith began publishing *Exotic botany*, employing a mixture of herbarium specimens and field sketches, and cultivated plants as models for the plates. He wrote thus:

> The chief aim of this present undertaking is not to co-operate with those publications which only describe plants actually blooming in the English gardens . . . it will rather be the object of our labours to introduce to the curious cultivator plants worthy of his acquisition and to teach those who have correspondents abroad what to inquire for.[19]

Be that as it may, the first illustration — *Humea elegans* — was prepared from a plant in Lady Amelia Hume's garden! Of *Blandfordia nobilis*, Smith noted that '. . . we are told there are living plants in England', whereas he wondered if the seeds of the *Tetratheca* species depicted '. . . have not been collected, or whether they will not bear so long a voyage as we have never heard of any plants being raised in Europe.'[20] Of *Epacris*, Smith stated that none was yet raised in England; he was apparently unaware that there were plants in the Royal Gardens at Kew.[21] On the other hand, *Viminaria denudata* and *Melaleuca thymifolia*[22] were depicted by Sowerby using living plants as models. *Exotic botany* contained thirty nine Australian plants, and ceased publication after only two volumes.[23]

In the early decades of the nineteenth century publications about garden plants in general proliferated in Britain. The Horticultural Society was established in 1806 (Fletcher 1969) and began issuing its *Transactions* in 1810; the first volume concluded with a long paper by one of the founders, Richard Salisbury (1812), on the cultivation of rare plants in which seven Australian plants are noted (Salisbury therein altered the generic name *Anigozanthos* to *Anigosia*, and noted that this kangaroo paw had flowered in the open air near East Cowes). Three years earlier, another founding father of the Horticultural Society, Joseph Knight (Willson 1982) had published the infamous monograph on cultivation of Proteaceae about which mystery remains (Knight 1809, Rourke 1987) as well as accusations of fraud and plagiarism; perhaps the text was by Richard Salisbury, but that enigma remains to perplex and amuse 'botanical archaeologists' (Rourke 1987).

Sydenham Edwards, an accomplished botanical artist, began *The botanical register* in 1815, while George Loddiges, an artist and nurseryman, founded *Botanical cabinet* in 1817 (Henrey 1975). Both Loddiges and Edwards obtained ample material among those Australasian plants already well-established in Britain for their separate periodicals. William Hooker, Professor of Botany at the University of Glasgow, issued three volumes of *Exotic flora* (with ten plates of Australian plants[24], but not all were from cultivated plants) between 1825 and 1827, abandoning it when he took over the editing of *Curtis's botanical magazine* following the death of John Sims. Robert Sweet, obviously a difficult, neurotic person who nurtured a personal vendetta against Kew and William Townsend Aiton, published *Flora australasiaca* in 1827 and 1828 — this single volume work contained 56 coloured plates, all executed from plants grown in or near London, and many raised from William Baxter's seed.

The horticultural periodicals were not primarily scientific works — they were issued to amuse and incidently to inform wealthy garden owners. The plants they depicted were grown for amusement, or because they were fashionable, not for scientific advancement — this is clearly stated when plants did not live up to aesthetic expectations (*Diplolaena dampieri* was condemned in one sentence — 'It can only now be regarded as a botanical curiosity'[25]).

Australasian plants in continental Europe c. 1800

Important botanico-horticultural publications were not produced solely in Britain, nor was the cultivation of Australasian plants confined to gardens in the United Kingdom. Exotic plants were as fashionable on the continent, where garden owners just as eagerly flaunted their new acquisitions.[26]

Ventenat's *Jardin de La Malmaison*, contained 46 Australian species[27] and two from New Zealand; this was one of the most sumptuous of the volumes including Australasian plants, and it shows that in Paris, at La Malmaison, considerable attention was given to their cultivation (Ventenat 1803). *Metrosideros anomala* and its compatriots were kept in the orangery during the winter — 'Il passe l'hiver dans l'orangerie'.[28] Quite a few reached France from England despite the Napoleonic wars: *Nicotiana undulata* was 'cultivee de graines envoyees d'Angleterre par M le Chevalier Banks'[29], and *Bignonia pandorea* from Norfolk Island, raised by Lee and Kennedy, was donated by Kennedy to the Empress's garden — for such largesse, Ventenat dedicated *Kennedia*[30] to the English horticulturist. There were also frequent notes to species other than those illustrated growing at La Malmaison. A handful of plants raised from seeds collected during Captain Baudin's expedition[31], including *Hibiscus heterophyllus*, *Apium protratum* and *Josephinia imperatricis*[32], also featured. Ventenat's book was issued in parts between April 1803 and November 1805. Redoute's monograph (1802) on the Liliaceae included just four Australasian plants — *Dianella caerulea*, *Anigozanthus flavidus*, *Sowerbaea juncea* and *Phormium tenax*[33] — as did Jacquin's *Plantae rariorum horti caesarei schoenbrunnensis* (1797–1804).

The traffic in Australasian plants between England and the continent, despite the unsettled state (cf. de Beer 1960, Nelson 1975, Carr and Carr 1978), is confirmed by records for the Royal Gardens at Kew. In June 1795 the Grand Duchess of Russia was sent *Banksia* plants and an unnamed species of *Crinum*[34] from Botany Bay, along with the sensational American *Fuchsia coccinea*. *Goodenia ovata*, *Sophora microphylla* and *Pittosporum undulatum* were included in a gift of over fifty plants dispatched in Spain in November 1796.[35] Her Sicilian Majesty was a recipient of *Telopea speciosissimum* late in 1800.[36] However, the Royal Gardens was not always so generous with surplus plants of which it had perhaps many, and was thus criticized in the 1820s by John Lindley:

> It is right, that in all questions about the period at which plants have been introduced, this distinction should be borne in mind, and that the world should be aware that the introductions of a plant to his Majesty's garden at Kew, is a very different affair from its introduction to Great Britain. An object cannot be properly said to be introduced from one country to another, unless it is afterwards disseminated by such means as the introducers possess; a practice which is adopted in every establish-

ment in the world, save in that one which ought to set an example to all others.[37]

The zenith of Australian plants, 1800–1835

From the scientific point of view, the Royal Gardens at Kew was the most significant recipient of plants. On 4 May 1806[38], Robert Brown visited Kew (Edwards 1981) listing in 'Plantae Novae Hollandiae in Horti Regio Kewensi crescentes. . .'[38] sixteen *Banksia* spp.[39], four *Lasiopetalum* spp. and at least eleven *Acacia* spp. Doubtless Brown's list was nothing like complete; it is, however, a fascinating document including the generic name *Threlkeldia*[40] which Brown did not publish for another four years (Wilson 1975). Many of these plants originated from Peter Good's seed which was received at Kew between 1803 and 1804[41] (Edwards 1981a, 1981b). Brown himself had collected seeds in Tasmania and New South Wales, after Good's death. Other plants had come from residents, including Governor Bligh who donated seeds.

At this time, William McNab was a gardener at Kew (Fletcher and Brown 1970), and gathered herbarium specimens from the plants growing there, indeed from those plants that Robert Brown saw and listed. McNab's Kew herbarium specimens (now in the National Botanic Gardens, Dublin (Nelson 1980, 1989a)) are of considerable importance as there is no similar material extant for this period in other herbaria; frequently McNab's specimens are annotated with the name of the original introducer — Robert Brown, Peter Good, George Caley, William Bligh are examples — and other comments about whether the plants were noticed in the second edition of *Hortus kewensis* (Aiton 1810). In May 1810 McNab left Kew to return to Edinburgh as curator of the Botanic Garden, and brought with him many plants — his friend Patrick Neill remarked that McNab was 'good at striking cuttings of *Banksia*'.[42]

Other botanical gardens had Australian plants — at the relatively new garden belonging to the Dublin Society at Glasnevin, outside Dublin, over seventy named Australian plants were being grown in 1802 and the majority of these undoubtedly came from Lee and Kennedy (Nelson and McCracken 1987). Some died within the next few years, but additions and replacements were found, and twenty six new taxa are included in the 1804 catalogue.[43] By 1838 the total had risen to over 200 species representing at least 60 genera.[44]

I cannot survey the whole history of Australian plant introductions in this paper (summaries are available in e.g. Coats 1969, Gorer 1978, Elliot 1980) but it may be useful to summarize briefly the following decades noting trends and a few particular incidents.

Although it is generally believed that the success rate for transporting plants in unglazed cases was low, Australian plants do seem to have survived the long journeys from the Antipodes tolerably well — the fact that most came from coastal localities may have had something to do with this.

Allan Cunningham was one of the major sources of living plants in the 1820s, and his introductions were prominent in *Curtis's botanical magazine*. In March 1821 a consignment arrived from him at Kew packed in '*Lycopodium uliginosum* being the only moss to be procured in quantity near Parramatta'.[45] In February 1822, cases contained *Patersonia* spp., eucalypts, ferns and *Telopea speciosissimum* which was always in demand (Nelson and McCracken 1987). Over the next few years, before returning to Europe, Cunningham sent Kew a substantial quantity of plants, including many orchids (enclosed in '. . . an open large case . . . securely protected from vermin during the passage to England'[47]), and soon these decorated the pages of *Curtis's botanical magazine*. In 1824 he included the first plant of *Fuchsia excorticata* from New Zealand (Brooker *et al.* 1988; Nelson 1989b).

Richard Cunningham, Allan's brother, also sent plants from Sydney Botanic Gardens to James Townsend Mackay at Trinity College Botanic Gardens, Dublin (Nelson 1988), in August 1833, including 'terrestrial and parasitical orchids by way of an experiment'.[48] Not many months later Richard Cunningham received in Sydney the first of Nathaniel Ward's special closely-glazed cases full of living plants — ferns, mosses and grasses. 'Allow me,' wrote Captain Charles Mallard R.N., who escorted the cases to Sydney, 'to offer you my warm congratulations upon the success of this simple but beautiful discovery for the preservation of plants in the living state upon the longest voyages, and I feel not a little pride in having been the instrument by which the truth of your new principle has been fully provided by experiment' (Ward 1842). In Ferbruary 1834, Richard Cunningham filled these 'Wardian cases' with Australian plants, including *Gleichenia microphylla* (and unwittingly the seed of *Callicome serrata* which germinated en route), and returned them to London where they were joyfully opened by Ward in the presence of George Loddiges (Ward 1842).

Before that, there were other successful hitch-hikers! Captain Philip Gidley King, on his return from Australia in April 1823, presented 'his Majesty's garden [Kew] with one good plant of *Cephalotus follicularis*, and one or two doubtful ones with some bog moss and earth from King George Sound'[49]; the Albany pitcher-plants bloomed at Kew in 1827 and were figured in a pair of plates in *Curtis's botanical magazine*. The bog moss and earth harboured tubers of the orchid *Microtis media* which was also drawn for the journal.[50]

Cunningham, Fraser, Gunn and Baxter were the principal collectors in Australia during the 1820s and 1830s (cf. Gilbert 1986). William Hooker published a series of Australian plants in *Curtis's botanical magazine*, the zenith being 1833 — beginning with *Melaleuca fraseri* and concluding with *Marsdenia flavescens*.[51] *Curtis's botanical magazine* vol. 60 contained 28 plates of Australian plants[52] (and *Plagianthus divaricatus* from New Zealand), vol. 61 had just 16 plates[53] including *Trachymene lanceolata* (another of the waifs that sprang up in the earth of other things), vol. 62 had 18 Australian species[54], vol. 63 had 10 Australian plants.[55] The latter volume also contained the tragic 'seeds' of the overthrow of Australian plants as popular garden subjects in north-western Europe.

Australian plants become unfashionable, 1835–1870

A portrait of the Scottish collector David Douglas (Coats 1969) followed the plate of the Tasmanian *Veronica labiata*. Douglas was the first of Sir William Hooker's 'botanical martyrs', his mysterious death in an Hawaiian bull-pit was sensational and his plants were just beginning to blossom in Britain (cf. Coats 1969, Gorer 1978). Thomas Drummond's equally mysterious demise in Havana in the same year enlarged the botanical martyrology and his plants too began to arouse great excitement. Hooker could only include four Australian plants in the 64th volume (along with *Clianthus puniceus* from New Zealand[56]) and three in the 65th of *Curtis's botanical magazine*, and four in the 66th volume.[57]

In March 1841 Sir William was appointed Director of the Royal Botanic Gardens at Kew (Desmond 1975), and there was a slight increase to seven plates in that year's issue.[58] James Drummond, Thomas's older brother, now entered the list of introducers with *Brachyscome iberidifolia* and *Anigozanthos manglesii*, and by 1848 in Dublin, there were four young plants of his discovery, that most miserable — horticulturally speaking! — plant *Hakea victoria*, raised from seeds sent to the Archbishop of Dublin (Nelson and McCraken 1987). But the plants of the Fitzgerald River region found by James Drummond could not compete in British gardens with the annuals of Texas discovered by Thomas Drummond. The fashion for the New Hollanders faded — William Henry Harvey noticed the trend:

> After writing to you about the Banksia I thought I had ascertained it to be B. occidentalis, but Moore has sent it to Lindley who has had it drawn, and I suppose it will therefore appear in Paxton's Magazine — under what name I know not, I thought that it was too unfashionable for you and that you had quite enough to figure without going so far from home.[59]

New Holland was now Australia, and free settlers were sending plants and seeds home to their friends — witness the stream of material to gardens like Glasnevin[60]; the plants were frequently mundane but, of course, quite demanding in their growing requirements and so they often failed to flower. In short there was no longer excitement generated by the very peculiar plants of Australia. David Moore summed up the decline in a letter to Sir William Hookder dated 6 December 1870 (Nelson and McCracken 1987);

> We still manage to keep a good many of the Cape and Australian Proteaceae which I am very fond of — but like you I cannot get our people to take much interest in them. I have often to rescue them from death when they are placed in some out of the way place. I have never found too much peat earth good for Proteaceous plants. Good rich loam with sharp sand and only a little peat best. Above all things, they harbor too much water. Those that are thick and fleshy about the root will only flower well when exposed to the warm sun in some sheltered nook and allowed to be well parched for a month or six weeks after they have made their young growth.[61]

Fashions had changed and horticultural technology had advanced. Glasshouses had more efficient heating and better glazing systems and could be built loftier and more elegantly. In 1844 Richard Turner began erecting the Great Palm House in the Royal Botanic Gardens, Kew (Blunt 1978, Diestelkamp 1982), the ultimate monument to those men including Richard Cunningham, David Nelson and Peter Good who died while collecting plants for the edification of the botanists and gardeners of Europe. Weird cacti, luscious orchids (some from Australia) and rampaging passionflowers began to fill the pages of *Curtis's botanical magazine* along with the glories of David Douglas and Thomas Drummond.

That is not to say that Australian plants were totally ignored by European gardeners; there was no longer a general craze to acquire and grow Australian plants and they were relegated to the scientific gardens and to the gardens of mild counties (e.g. Arnold-Foster 1948) where quiet experiments were being conducted by a special kind of gardener — the plantsman. Botanical gardens still received living plants, and collectors did send seeds and Wardian cases — for example Charles Moore in Sydney exchanged Wardian cases with his older brother David at the Royal Dublin Society's Botanic Gardens.

By the middle of the nineteenth century, beautiful hardy plants that flowered profusely out-of-doors and did not sulk like the Australian ones were in most demand. Travellers continued to bring back seeds as souvenirs, and expeditions were specially commissioned to seek for the '. . . hidden beauties . . . planted in the lost mountains'.[62] Michael Edgeworth and Edward Madden were pillaging the rich meadows and woodlands of the Himalayas (where the young Joseph Hooker would soon follow), and John Tweedie was ploughing a lonely furrow across the Argentinian pampas (Gorer 1978; Nelson and McCracken 1987). Robert Fortune had started to unlock the treasure chest of China. Their plants stole pride of place. And of course there were the giants — *Wellingtonia* (now *Sequoiadendron gigantea*) from California and *Victoria amazonica* from the Amazon basin. Flora was being worshipped in other lands and the haggard gum-trees of 'barren, desolate' Australia became passé.

Problems for taxonomists

The principal cause of taxonomic difficulties connected with the early cultivation of Australasian species in Europe is the simple fact that there exists a substantial and diverse group of Australian species described and named long ago not from wild, natural populations, but from garden plants. This circumstance particularly prevails in the decades before the publication of *Flora australiensis* (Bentham 1863–1878). Very few Australian species were named from cultivated plants after 1863 because George Bentham and his successors did not use living plants, their domain being the herbarium with its neatly pressed and labelled carcasses, more numerous and more informative perhaps than the few miserable plants that managed to survive the dim light and soggy soil of northern greenhouses.

The difficulties encountered by present-day taxonomists may be grouped into four catergories:

1. the date of publication of a name and the elimination of earlier sources;
2. the author of the name;
3. the typification of the name, in particular the location of likely type specimens; and
4. the equation of a now-defunct cultivated plant, at best represented only by a solitary herbarium specimen or a published figure, with still- extant wild populations.

The first three problems are also encountered by taxonomists working with herbarium specimens collected in the wild; only the fourth is uniquely associated with garden plants.

1. Dates and earlier sources

The dates of publication of most botanical periodicals and books is now superbly documented by Stafleu and Cowan in the second edition of *Taxonomic literature* (TL-2: see this volume); this is an essential reference work for all taxonomists. That is not to say that new information will not be available from previously unexamined sources to indicate dates other than those revealed by the dilligent work of Frans Stafleu, Richard Cowan and their many collaborators.

I may give an example. Jonas Dryander's *Catalogus bibliotheca Banksianae* is not generally considered to be a botanical source, but it does contain names of plants which must be examined for priority. According to TL-2 the third volume of Dryander's catalogue was published on 9 November 1797, but Banks donated a copy to the Linnean Society of London on 3 October 1797[63] and I would consider that worthy of note in any controversial nomenclatural problem arising from *Catalogus bibliotheca Banksianae.*

What about eliminating the possibility of earlier names, both valid and invalid? Mabberley[64] has demonstrated with considerable force that we ignore ephemeral or 'unknown' publications at our peril. Stearn has also had to make a similar point with regard to the generic name *Burtonia* and the binomial *Hibbertia grossulariifolia* (Stearn 1982), in this latter instance because of a cancelled page in Richard Salisbury's *Paradisus londinensis.*

Let's deal with ephemera first. One major source of botanical names is nursery catalogues, and far too few botanists ever bother to consult these. Most of them contain only lists of names, but that is not an invariable rule. What would have been the consequences if William Malcolm has inserted a brief description alongside his entry for 'Metrocedros obliqui' (Nelson 1983) in his catalogue of 1778? Put simply we would have had a new generic name for *Eucalyptus* and a new specific name for the type species. However the general situation is that nursery catalogues do not include new binomials[65] probably because nurserymen relied on the botanists to name their plants — they were not competent to devise names nor to identify their seedlings, witness the fact that *Melaleuca hypericifolia* was thought to be an *Hypericum* until it bloomed[66].

But names did 'leak out'. It is evident that at the Royal Gardens, Kew, unpublished names were attached to growing plants — Robert Brown's manuscript list and William McNab's herbarium specimens confirm this. The McNab herbarium includes specimens inscribed with the generic name *Haxtonia*, a name not published until 1831 (by David Don); to be sure it may be argued that McNab labelled plants after 1831, but the same is cited in a contemporary manuscript — the Kew 'Inwards' book for 1808[67] — so we must conclude that the name was proposed and then placed on labels in the Royal Gardens. If any such names are discovered to have been published in nurserymen's catalogue with descriptions, nomenclatural problems will ensue.

Newspapers, non-scientific periodicals and non-botanical books[68] can contain names and descriptions, and the removal of the clause about incidental mention from the *International Code of Botanical Nomenclature* (ICBN; Greuter, McNeill *et al.* 1988) now means that any name accompanied by a description has to be considered. However, the proposal for some form of a register of current names, and a concommitant ruling that long-abandoned ones cannot be resurrected, will if agreed by the international taxonomic community obviate these difficulties in future.

The problem revealed by Stearn is another one that must exercise those few of us who are inclined to bibliographic pursuits. Cancelled pages in books and periodicals were by no means rare during this period as evidenced by copies in which the tell-tale instructions to the binders remain intact; clearly authors and their publishers were not embarrassed to issue new text if errors were encountered. Cancelling a page of text that is already published does not invalidate the publication under the ICBN, yet I know of no concerted attempt to check any of the major botanical periodicals for cancellations, nor can I say if the cancellations affect the nomenclature of other Australasian species than those noted by Stearn.[69]

2. Authorities

The authorities of names also need to be given careful consideration. The old 'chestnut' is the second edition of William Aiton's *Hortus kewensis* — most scholars now accede to the system of stating that names published in volume 1 are cited as 'Dryander in Aiton' (Dryander being the authority), and those in subsequent volumes as 'R. Brown in Aiton' (Brown being the authority) (cf. Stafleu and Cowan 1976).

Periodicals such as *Curtis's botanical magazine* present similar problems. Sometimes the text for an individual plate is signed, or there is some other indication of the name of the author. In the case of *Carmichaelia*, John Lindley signed the text and ascribed the name to 'Brown mss'. The current New Zealand flora (Allen 1961) cites Brown as the author although there may here be a case for 'Brown ex Lindley' (shortened to Lindley).

Similar difficulties arise with *The botanist's repository* for while Henry Andrews wrote the text of the first five volumes, Adrian Haworth 'conducted' the letterpress of volume 6, and George Jackson 'supervised' the remainder (Stafleu and Cowan 1976). The authorities for some species published therein are confused — *Veronica derwentiana*[70] from Tasmania is ascribed by Robert Brown to Littlejohn.

3. Typification

The typification of names of species described from cultivated plants may present many more difficulties than had the species been named from wild-collected herbarium specimens.

Did the original author use only cultivated plants or did he have both the cultivated plant and herbarium specimens in front of him? Such a question will be impossible to answer without careful examination of all the available material, both published and unpublished, and the herbarium specimens. If both cultivated and wild material were evidently used, preference might be given to selecting as a type a herbarium specimen for a known locality. But the ICBN does lay down rules about types and these must be applied.

Assuming that only a cultivated plant was available to the author, there may be considerable difficulties in finding a preserved specimen. A few sources of such specimens are well-known — the British Museum (Natural History), for example, contains herbarium specimens from the Royal Gardens at Kew, chiefly from the period before 1800 but nothing much, therefore, that can be used to typify plants described in the second edition of *Hortus kewensis* (Aiton 1810). William McNab's specimens gathered at Kew between 1805 and 1810 fill a portion of this lacuna, and some may serve as types (Nelson 1980); *Brachysema latifolia* (Crisp, 1989) and two species of *Acacia* (Maslin, in herb.) have recently been typified by specimens in Dublin. Like the cancelled pages, these specimens (and others from cultivated plants) should not be ignored, as their presence may result in an improper choice of type — such a choice must be corrected under the ICBN.

The more usual result of a search for herbarium specimens derived from a cultivated plant is that nothing will be located. In some cases drawings can be selected as types, and original watercolours for many of the drawings in *Curtis's botanical magazine* exist at Kew.

4. Equations

This may not seem of great importance, but the ICBN is being modified subtly at international congresses and we have to be aware of all difficulties. It is salutary to remember that the first Australian plants given Linnean binomials were fortuitously illustrated, and by equating those illustrations (both excellent) with wild plants the two taxa — *Acacia truncata* and *Synaphea polymorpha* (George 1971, Maslin 1978) — were identified.

The rule on monstrosities was abolished some years ago, meaning that specific names based on aberrant forms of plants could no longer be disregarded. This has resulted in some unhelpful changes which irritate both botanists and gardeners — for example a hybrid between two of the European species of *Erica* long known to Irish botanists and to horticulturists as *Erica* x *praegeri* must now be named *E.* x *stuartii*, a name based on an aberrant form, now a cultivar (*E.* x *stuartii* 'Stuartii') (Nelson 1979).

I do not know of any examples of Australian species based on monstrosities, but my perambulations through the various publications did reveal a number of strange dwarf cultivars — I have not investigated their names in detail but they are perhaps later synonyms.

Fortunately little horticultural experimentation was perpetrated on Australian species during the principal period of their cultivation in the early nineteenth century. Hybrids of *Correa* were produced deliberately, and perhaps also some in *Epacris*, but these are clearly signalled in the horticultural texts. Thus Australian taxonomists do not have to contend with innumerable variants that bedevil *Fuchsia*, for example, although anyone concerned with the nomenclature of cultivars should certainly not overlook these nineteenth century publications.

The cultivated plants depicted in the works I have reviewed display a syndrome of characters (mostly vegetative) that betray to the experienced eye their languishing in dull light, restrictive pots and a too-generous water-supply. Again, it is fortunate that most of the plants depicted in nineteenth century books and periodical were in bloom — non-blooming angiosperms were never painted for these pictorial volumes — so this is not a problem. But there are many names published without accompanying illustrations — for example in Salisbury's *Prodromus*[71] — and the original subjects ('type plants') were perhaps not typical of wild, native populations; without herbarium specimens, illustrations, or early attempts at synonymy these names will continue to be orphans, unassigned *nomina regicenda, nomina incertae sedis.*

Conclusions

The full history of Australasian plants in cultivation in Europe has yet to be researched, unravelled and recorded. The new awareness of the value of Australia's and New Zealand's endemic plants as ornamentals in antipodean gardens should stimulate interest in this neglected part of the heritage and cultural development of these nations. The primary documents for this history are in Europe scattered through the dusty, unloved archives of venerable institutions like the Royal Botanic Gardens at Kew, the National Botanic Gardens at Glasnevin, and the Jardin des Plants in Paris, and that may retard research, but not for long, I hope. Much progress has been made in recent years towards revealing the information contained in those archives; my own cursory glances at what does survive has revealed that while the general pattern of the history has been sketched in outline, the finer details remain to be inserted. In particular, claims of first introduction, unsupported by evidence from contemporary manuscripts and herbaria, need to be treated with extreme caution — the fact that authors continue to state that *Banksia serrata* was the first Australian plant grown in Britain, despite contemporary statement to the contrary and recent research papers (Nelson 1983), points out how far we must still go.

Australian plants have enthralled gardeners and beautified British, Irish and European gardens for more than two centuries. They continue to excite interest among those adventurous spirits (e.g. Talbot de Malahide 1967), the so-called plantsmen (of both sexes), who are the dynamos that keep horticulture fresh and lively. *Telopea truncata*, *Acacia dealbata*, *A. verticillata*, *Sollya heterophylla*, a handful of *Correa* hybrids, a respectable clutch of *Grevillea* cultivars and groves of stately eucalypts are relatively common in Ireland and Britain (cf. Connolly and Dillon 1986, Irons 1988). And there are many other species and cultivars (see e.g. Forrest 1985). *Dicksonia antarctica* and its New Zealand cousins imbue unique character to the gardens of counties warmed by the moist west winds (Arnold-Foster 1948, Morley 1979, Nelson 1989b).

Two centuries after the landfall of the 'First Fleet' at Botany Bay we may look back with a wry smile to George Jackson, the man commemorated by Robert Brown and Sir James Edward Smith in *Jacksonia*, who in eulogizing *Pomaderris lanigera* succinctly — and aptly for this particular *annus mirabilis*! — recorded the contemporary English opinion;

> To New Holland we export criminals for our convenience and safety, and from thence import furs for our covering

and flowers for our amusement. So far the balance of trade is in our favour.[72]

Notes

1. Quoted by Searle (1973), p. 17; Clarke, M. (1876). Preface. *In* Gordon A. L., *Sea spray and smoke drift*. (Melbourne).
2. From *Transmigration* (1778), an anonymous verse satirizing Banks and Solander, quoted in Smith (1985, pp. 46–47).
3. A recurring phrase from traditional folk-songs; see e.g. O'Shaughnessy, P., Inson, G. and Ward, R. (1968). *The restless years, being some impression of the origins of the Australians.* (Jacaranda Press, Milton, Qld.) p. 13.
4. The specimens collected by Dampier were in flower, apparently without fruits (see Marner 1988); on the fate of the *Roebuck*, see Lloyd (1966). Sturt's desert pea is first recorded in cultivation in Europe during the early 1850s [see *Flore des serres* . . . 6: 121–122 (1851)].
5. For discussion of this see e.g. Gorer (1978), pp. 13–37.
6. This phrase was frequently employed by authors in the late eighteenth and early nineteenth centuries, e.g. White (1790).
17. Phillip's journal was an edited compilation, so that this comment (Phillip 1789, p. 294–295) must have been interpolated by the English editor. As noted, Lee and his partner John Kennedy had a substantial interest in Australian plants, claiming as a 'first' *Banksia serrata* — but see Nelson (1983) and Cavanagh (1983a).
8. *The botanical magazine* pl. 260: now *Callistemon citrinus* (Cavanagh 1983b). This name for the magazine remained for vols 1–14 (1787–1801). It was changed to *Curtis's botanical magazine* for subsequent volumes. The common abbreviation for both titles, used herein, is *Bot. Mag.*
9. *Bot. Mag.*, pl. 691: now *Wahlenbergia gracilis.*
10. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book', entry for 7 June 1793 (brought by HMS *Atlantic*).
11. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book', entry for 18 June 1793 (received through Sir Joseph Banks; Paterson sent 20 papers of seed; Phillip '. . . brought home . . . 80 papers').
12. cf. Smith (1962, pp. 9–11).
13. *Bot. Mag.*, pl. 110: plants had already set seed in England.
14. *Bot. Mag.*, pl. 167: flowered at Chelsea Physic Garden in 1791.
15. *Bot. Mag.*, pl. 260.
16. *Bot. Mag.*, pl. 263, 268, 270: species of *Hardenbergia* and *Kennedia* which were noted, respectively, as having been introduced by J. Ord (*H. violacea*), being 'very generally known to nurserymen' (*K. rubicunda*), and having been 'very lately raised by several persons' (*K. prostrata*).
17. *The botanists repository*, [abbreviated herein as *Bot. repos.*] pl. 18: *Correa alba* was from J. Vere's garden, Kensington.
18. *Bot. repos.*, pl. 258, 286: *Banksia praemorsa* was erroneously stated to have reached the Royal Garden, Kew, in 1788. It was not introduced until 1792, and by 1802 a plant at Clapham had reached seven feet (c. 2m) in height. *Hisbiscus patersonius* had flourished especially in Lord Courtney's garden, Exeter.
19. Smith (1804), [abbreviated herein as *Exot. bot.*]
20. *Exot. bot.*, pl. 4. (*Blandfordia*); 21 (*Tetratheca glandulosa*); other species of *Tetratheca* were portrayed in pl. 20 (*T. ericifolia*), 22 (*T. thymifolia*).
21. *Exot. bot.*, pl. 39 (*E. grandiflora*), 40 (*E. obtusifolia*); Aiton (1810) listed species in the Royal Gardens, Kew.
22. *Exot. bot.*, pl. 27, 36: *Viminaria* had been in flower at Stockwell in 1794, and *Melaleuca thymifolia* was raised by J. and J. Fairbairn, nurserymen at Chelsea, as well as by Robinson at Stockwell where it bloomed in 1794.
23. *Exot. Bot.*, pl. 25 (*Dillwynia ericifolia*), 26 (*D.floribunda*), 27 (*Viminaria denudata*), 29 (*Thelymitra ixioides*), 30 (*Diuris maculata*), 34 (*Melaleuca ericifolia*), 35 (*M. nodosa*), 36 (*M. thymifolia*), 39 (*Diuris maculata*), 40 (*E. obtusifloia*), 41 (*Drosera peltata*), 42 (*Metrosideros hispida*), 35 (*Campanula gracilis*), 55 (*Melaleuca genistifolia*), 56 (*M. linarifolia*), 58 (*Gompholobium intricatum*), 59 (*Leptospermum ambiguum*), 66 (*Ventenatia major*), 67 (*V. minor*), 72 (*Correa virens*), 78 (*Eriocalia major*), 79 (*E. minor*), 82 (*Conospermum longifolium*), 83 (*Persoonia ferruginea*), 84 (*Eucalyptus resinifera*), 88 (*Solanum stelligerum*), 104 (*Arethusa catenata*).
24. Hooker's *Exotic flora*, pl. 8 (*Doodia aspera*), 24 (*Velleia lyrata*), 25 (*Doodia caudata*), 32 (*Stylidium laricifolium*), 96 (*Banksia verticillata*: flowered at Liverpool Botanic Gardens in 1813), 185 (*Galega tricolor*), 215 (*Pyrethrum diversifolium*: in Edinburgh and Glasgow Botanical Gardens), 216 (*Grevillea pubescens*: bloom in 1825 at Royal Botanic Gardens, Glasgow), 225 (*Viola hederacea*), 232 (*Fieldia australis*).
25. *The botanical register*, [abbreviated herein as *Bot. Reg.*] (1841), pl. 51.
26. see e.g. Kraus (1894); Duval (1982) makes only brief mention of Australasian plants.
    It is difficult to gather information on Australasian plants cultivated in the gardens outside Britain and Ireland as few historical summaries, similar to those of Coats (1969) and Gorer (1978), have been published.
27. The plants depicted by Ventenat included e.g. pl. 2 (*Xeranthemum bracteatum*), 13 (*Correa alba*), 108 (*Andreusia glabra*: named for Henry Andrews).
28. *Jard. Malmaison*, pl. 5.
29. *Jard. Malmaison*, pl. 10.
30. *Jard. Malmaison*, pl. 104, 105, 106.
31. Introductions are attributed to Capt. Hamelin.
32. *Jard. Malmaison*, tab. 67 (*Josephinia imperatricis*), 81 (*Apium prostratum*), 103 (*Hibiscus heterophyllus*).
33. *Liliacees*, pl. 1 (*Dianella ensifolia*), 176 (*Anigozanthos flavidus*), 341 (*Sowerbaea juncea*), 448 [*Phormium tenax*: received originally in France from the Royal Gardens, Kew in 1800, but later introduced directly from Australasia by Baudin's expedition (*Le Naturaliste*) through L'Havre.]
34. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book', entry for June 1795 (ff. 42–43).
35. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book', entry for 9 November 1796.
36. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book', entry for 26 November 1800.
37. *Bot. Reg.*, pl. 1288: *Isopogon formosus* (raised from William Baxter's seed, gathered at Lucky Bay, Western Australia, 1824).
38. MS. in Department of Botany, British Museum (Natural History), London: in Edwards (1981, p. 24) the date is incorrectly given as 1804. It is possible that the date is 4 March 1806, not 4 May, but in reading the manuscript I consider that Brown wrote 'Mai' not 'Mar'.
39. These were named as follows: *B. praemorsa*, *B. verticillata*, *B. grandis*, *B. speciosa*, *B. repens*, *B. latifolia*, *B. oblongifolia*, *B. attenuata*, *B. serrata*, *B. ericaefolia*, *B. spinulosa*, *B. virens*, *B. platycarpa*, *B. asplenifolia*, *B. plumosa*, *B. sessilifolia* ?
40. Brown noted *Threlkedia glauca*.
41. For a later consignment — early 1805 — see MSS. in Royal Botanic Gardens, Kew: 'Inwards Book 1805–1809', entries:
    > '12 Mr Peter Good collected the following seeds in New South Wales. They were brought Home in the Calcutta Man of War. . .
    > 13 Seeds from Mr Peter Good. 140 papers exclusive of Banksia's.
    > 14 Banksia.'
42. MS. in School of Botany, University of Dublin (Trinity College), Neill to James Townsend Mackay 21 March 1811. McNab is a minor figure, but he knew many of the Scotsmen (Robert Brown included) who were so significant in the botanical world at this time, and he developed a keen interest in southern hemisphere plants which culminated in the publication of a small pamphlet — McNab, W. (1832). *A treatise on the propagation, cultivation and general treatment of Cape heaths* . . . (Clark: Edinburgh) — about the cultivation of *Erica* spp. from the Cape of Good Hope. For further information see Nelson (1980), Nelson and McCracken (1987).
43. Underwood, J. (1804). *A catalogue of plants, indigenous and exotic cultivated in the botanic garden belonging to the Dublin Society at Glasnevin* . . . (Dublin Society: Dublin) — for details of the published catalogues of Glasnevin Botanic Gardens, see Nelson (1981).
44. MS. in National Botanic Gardens, Glasnevin: catalogue of plants prepared by David Moore. See Nelson and McCracken 1987, pp. 100–102).
45. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book 1804–1826', entry for March 1821. (ff. 153–155).
46. MSS. in Royal Botanic Garden, Kew: 'Inwards Book 1804–1826', entry for February 1822. (f. 162).
    In 1809, John Underwood, head gardener at the Dublin Society's Botanic Gardens, Glasnevin, had succeeded in obtaining a plant of *Telopea speciosissimum* from Loddiges for 10 guineas (about one tenth of his annual salary) — it was the only plant then available for sale, and he was informed that only two

English gardens, apart from Kew, possessed the 'weretah' (Nelson and McCracken 1987). [Nixon (1987) makes no mention of early cultivation of the waratah in Europe].

47. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book 1802–1826', f. 189.
48. MS. in School of Botany, University of Dublin (Trinity College): R. Cunningham to James Townsend Mackay, 1 August 1833.
49. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book 1804–1826', f. 165.
50. *Bot. Mag.*, pl. 3118 & 3119 (*Cephalotus follicularis*), 3378 (*Microtis media*).
51. *Bot. Mag.*, pl. 3210 (*Melaleuca fraseri*), 3289 (*Marsdenia flavescens*).
52. The Australasian plates in vol. 60 are numbered 3210, 3212, 3219, 3223, 3228, 3236, 3243, 3244, 3249, 3251, 3253, 3254, 3257, 3258, 3259, 3260, 3264, 3266, 3270, 3271 (*Plagianthus divaricatus* from New Zealand), 3272, 3274. 3276, 3279, 3281, 3285, 3288, 3289.
53. The Australasian plates in vol. 61 are numbered 3307, 3308, 3312, 3313, 3322, 3323, 3324, 3328, 3330, 3334 (*Trachymene lanceolata*), 3337, 3338, 3341, 3346, 3351, 3358.
54. The Australasian plates in vol. 62 are numbered 3377, 3378, 3394, 3396. 3399, 3400, 3401, 3405. 3407, 3415, 3417, 3419, 3420, 3421, 3424, 3438, 3443, 3450.
55. The Australasian plates in vol. 63 are numbered 3459, 3461, 3469, 3483. 3500, 3502, 3513, 3523, 3535, 3539.
56. The Australasian plates in vol. 64 are numbered 3582, 3584 (*Clianthus puniceus*), 3607, 3624, 3625.

    Clianthus puniceus was introduced to Britain about 1830, following its discovery by missionaries, and bloomed in the summer of 1832. It was and still is a popular, but difficult plant, for northern European gardens. Soon after its first flowering John Lindley read a paper about it to the Royal Horticultural Society (see Nelson 1989b), and within a short period it was being illustrated in other places. Allan Cunningham, in a letter to William McNab of Edinburgh, written on 29 April 1837 in Sydney, asked:

    > Could you send me the seeds of Clianthus puniceus, which altho' a Native of N. Zealand near us, we have a diffy in obtaining plants from hence, and the locality of that beautiful scarlet fl is not fully understood.
    >
    > MS. in Royal Botanic Garden, Edinburgh (McNab family scrapbook).

57. The Australasian plates in vol. 65 are numbered 3652, 3658, 3672, and in vol. 66 are numbered 3721, 3760, 3775, 3784.
58. The Australasian plates in vol. 67 are numbered 3798, 3816, 3826, 2833, 3857, 3875 (*Anigozanthus manglesii*), 3876 (*Brachyscome iberidifolia*).
59. MSS. in Royal Botanic Gardens, Kew: William Harvey to Sir William Hooker, 2 December 1850 (English Letters vol. 29: 338).
60. Between 1848 and 1879, 28 consignments reached Glasnevin from the Botanic Gardens in Sydney including in 1856 ten fine tree ferns from four to eight feet high; during the same period Melbourne Botanic Gardens sent four consigments (236 pkts of seeds).
61. MSS. in Royal Botanic Gardens, Kew: David Moore to Joseph Hooker, 6 December 1870 (English Letters vol. 95: 327).
62. Kingdon Ward, F. (1924). *From China to Hkanti Long.* (London). Quoted by Coats (1969, p. 86).
63. This copy is still in the Library, Linnean Society, London (G. Douglas, pers. comm.)
64. e.g. Mabberley, D. (1983). Dr Smith's *Anemia*, or, the prevention of later homonyms. *Taxon* 32: 79–87.
65. I examined, for example, the annotated series of catalogues issued by Messrs Loddiges (1804, 1807. 1811) and none contained descriptive notes; any names in these are *nomina nuda*.

    Few catalogues about the turn of the eighteenth century contain Australasian plants. Loddiges's catalogues are perhaps the most interesting as they cover the period of Good's and Brown's introductions during which, as has been noted, unpublished names were available to gardeners at least those in favour at the Royal Botanic Gardens, Kew. [For details of these catalogues, see Harvey (1973, 1981)].
66. *Bot. repos.*, pl. 200. This was raised in 1792 by William Malcolm, and 'called an hypericum until it flowered. . .'
67. MSS. in Royal Botanic Gardens, Kew: 'Inwards Book 1805–1818', entry for 1808, f. 276 (three plants from George Caley named '*Haxtonia arborea*' (no. 359, Hobart), '*H. canescens*' (no. 363, 'Stapin Island Dec 1805') and '*Haxtonia* [ined.]' (no. 376, Hobart).

    Don (1832, in *London Edinburgh Philos. Mag. & J. Sci.* 1: 272) stated 'Haxtonia nomen Asteri argophyllo Billardieri primum imposuit B. Georgius Caley', thereby obliging us to give Caley ex Don as the authority for the name. The reason why Caley chose to honour the obscure gardener John Haxton, who accompanied Lord Macartney on his famous Embassy to China, has not been discovered. *Index kewensis* and Burbidge (1963) are in error in attributing *Haxtonia* to Allan Cunningham.
68. cf. *Xanthorrhoea* which is predated by *Acaroides*, published in a medical journal The case is not perhaps relevant for cultivated plants, but how many botanists have examined the pharmacopaea issued in London after 1788 to see what names lurk therein?
69. One example I am aware of is in *Bot. Reg.*, pl. 912 (*Carmichaelia australis*, a New Zealand taxon); the original page bore the name *Lotus arboreus* Forst., and no description but a note saying that the '. . . letter-press . . . is unavoidably deferred until next month, in expectation of some interesting information respecting the plant from the pen of Mr Brown.' Robert Brown named the plant after Dugald Carmichael; the name was published in the issue of October 1825, not that of September 1825 as would be supposed from the date on the plate.
70. *Bot. repos.*, pl. 531 — see also errata wherein the specific epithet is corrected from the form '*derwentia*' to '*derwentiana*'.
71. See Barker & Barker, this volume; Britten (1916).
72. *Bot. repos.*, pl. 569.

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